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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,058	03/17/2004	Anuj Chauhan	T2315-908542US02	1707

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EXAMINER	
BERRIOS, JENNIFER A	

ART UNIT	PAPER NUMBER
1619	

NOTIFICATION DATE	DELIVERY MODE
07/29/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/802,058	CHAUHAN ET AL.	
	Examiner	Art Unit	
	Jennifer A. Berrios	1619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2010 and 25 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application.
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the reply 2/25/2010 and 5/17/2010, wherein claims 1 and 2 has been amended.

Currently claims 1-21 are pending examination.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original non-provisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 60/385, 571, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. Claim 16 does not find support in the provisional application 60/385,571 and as such will be granted a priority date of 6/5/2003.

Examiner would like to note that the priority was brought into question given applicant arguments regarding the Raut reference being an improper reference given the priority date of the instant applicant as this application is a CIP of 10/454,836 filed 6/5/2003, which claims priority from provisional application 60/385,571 filed 6/5/2002.

Withdrawn Rejection

The rejections of Claims 2-3 and 21 are under 35 U.S.C. 103(a) as being unpatentable over Resnick (US 2002/0141760), Ding (PSTT, Vol. 1, No. 8, Nov 1998), Vandamme (Progress in Retinal and Eye Research 21 (2002)15-34), Nagarsenker et al (Int. Journal of Pharmaceutics 190 (1999) 63-71) and Paul et al (Current Science, Vol. 80, No. 8, 25 April 2001) are withdrawn due to claim amendment.

The rejection of claims 1-21 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn due to claim amendment.

Maintained/Modified Rejections

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negatived by the manner in which the invention was made.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 4-5, 7-15 and 20 **remain** rejected under 35 U.S.C. 103(a) as being unpatentable over Resnick (US 2002/0141760), Ding (PSTT, Vol. 1, No. 8, Nov 1998), Vandamme (Progress in Retinal and Eye Research 21 (2002)15-34), Nagarsenker et al (Int. Journal of Pharmaceutics 190 (1999) 63-71) and Paul et al (Current Science, Vol. 80, No. 8, 25 April 2001). Rejection modification necessitated by claim amendment.

Regarding claims 1, 4, 9 and 12: Resnick teaches a contact lens containing nanospheres that are incorporated directly therein (paragraphs 0003 and 0006). Resnick further teaches methods of incorporating drugs and therapeutic agents into the contact lens for the purpose of drug delivery to the eye (paragraph 0019 and claim 2) as well as a kit (title; fig. 3). Resnick refers to US patents 5,891,932 and 4,865,439 in paragraph 0006 for their teaching of typical contact lenses that Resnick uses as starting materials. Said patents teach soft contact lenses and incorporation of 2-hydroxyethylmethacrylate as well as storing the lenses in saline solution.

Resnick is silent to the phrase "optically transparent", however the definition of said term in applicant's specification states, "a degree of transparency equivalent to that of p-HEMA or other material employed as a contact lens". The materials taught in Resnick read on said definition.

Ding is cited to demonstrate that it's well known in the art that nanoparticles can be utilized, which provide sustained drug release and prolonged therapeutic activity for the delivery of either hydrophobic or hydrophilic ophthalmic drugs (Pg 332-333). Furthermore controlled particle size and control of the rate of the drug release must be further examined.

Regarding claims 10-11 and 14-15: Resnick is silent to the particulars of the kit claimed in the instant claims.

It is well within the knowledge of one of ordinary skill in the art to include a kit or article of manufacture because they provide a convenient mechanism to disperse products to consumers. Additionally, labels containing indications, directions, warnings,

etc. are mandated. A practitioner would reasonably expect a kit comprising the drug delivery system of Resnick to provide a convenient mechanism to disperse the product to consumers as well as inform the consumer of indications, directions, and so on. Therefore, in Resnick it would have been obvious to one of ordinary skill in the art to package and label delivery system in a kit or article of manufacture.

It is also well within the knowledge of one of ordinary skill in the art to include a drug-saturated solution in the kit so the drug does not diffuse out of the contact lens and become diluted. A practitioner would reasonably expect the contact lens to have a therapeutically effective amount or concentration of drug. Therefore, in Resnick it would have also been obvious to one of ordinary skill in the art to include a drug-saturated solution in a kit or article of manufacture.

Resnick fails to teach the ophthalmic drug nanoparticles to be encapsulated with an encapsulation material selected dependent on the drug characteristic (hydrophobic or hydrophilic), such as liposomes or micro emulsions as recited by instant claims 1, 5 and 8 and the ophthalmic drug being pilocarpine, as recited by instant claim 20.

Vandamme teaches micro emulsions as ocular drug delivery systems, which are thermodynamically stable and inherently provide the capacity to make soluble lipophilic drugs (Pg. 16). The main advantage of the micro-emulsion is the increase in the solubilization of drugs. Table 4 demonstrates a microemulsion containing the drug pilocarpine. Paul further teaches that micro-emulsions allow sustained release or controlled drug release for ocular administration (Pg 995).

Nagarsenker teaches the preparation and evaluation of liposomal formulations for ocular delivery, which can serve as a slow release depot. Ophthalmic drugs were entrapped in liposomes. Liposomes have the ability to entrap hydrophilic compounds in the aqueous compartment and to incorporate hydrophobic molecules in the lipid bilayers (Pg 64).

Both Vandamme and Nagarensker teach encapsulation materials, liposomes and micro emulsions that can be used with hydrophilic or lipophilic (which are hydrophobic).

It would have been prima facie obvious to one of skill in the art at the time the invention was made to combine to teaching of Resnick/Vandamme and Nagarensker to arrive at the instant invention. One of skill in the art would have been motivated to select one of the encapsulations materials, micro encapsulation or liposomes as taught by Vandamme and Nagarensker depending on the drug utilized in the nanoparticles, hydrophobic or hydrophilic, as Vandamme teaches that micro emulsions make lipophilic drugs more soluble and liposomes are efficient for slow release depot of drugs. Finally one of skill in the art would expect reasonable success because Resnick/Vandamme/Nagarensker all teach controlled release ocular drug delivery.

Response to Arguments

Applicant continues to submit that the focus and intent of Resnick's invention is very different from that of the current invention, and that Resnick does not enable a person of ordinary skill to load nano/microspheres into contact lenses for the purpose of

extended drug delivery. This is not persuasive as discussed in the office action mailed on 9/25/2009 and 4/16/2008.

Applicant therefore submits that given Applicant's priority date (6/5/2002) prior to Resnick's publication date (10/3/2002) - Resnick is not a proper prior art reference to the present application. This is not persuasive. Although Resnick is not a proper reference under 102a, Resnick is a proper 102e reference with a filing date of 3/29/2001, as stated in the MPEP: **(e) the invention was described in** - (1) an application for patent, published under section 122(b), **by another filed in the United States before the invention by the applicant for patent** or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351 (a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Applicant further notes that Vandamme lists a publication date of 2002. The month of publication is not apparent from the article. It is therefore unlikely that Vandamme does not qualify as prior art to be cited against the present invention. The Applicant requests the Examiner to inform the month of Vandamme publication within 2002 so that Applicant can determine whether he must swear behind the reference pursuant to 37 C.F.R. § 1.131. Examiner would like to note that in the pdf copy of the

Vandamme reference provided to the Applicant, Examiner personally added the publication month (January 2002).

Applicant argues that Ding relates to ophthalmic drug delivery by way of eye drops, and Vandamme provides absolutely no mention or consideration as to implementing a delivery system using a contact lens as a vehicle. The studies in Vandamme related to administration via eye drops. Nagarsenker discloses ophthalmic drug administration via drops and/or gels. Paul et al provide an overview of potential applications of compartmentalized systems of microemulsions. Applicant submits a delivery system such as contemplated by Paul is fundamentally different from dispersions of the nanoparticles in contact lenses. Darougar's patent teaches ophthalmic drug delivery through a device that is cylindrical in shape with a length of at least 8 mm and a maximum diameter not exceeding 1.9 mm. This device is designed to be inserted into the upper or the lower fornix. The teachings of this patent are substantially different from the present claims in view of the significant differences in the shape and the site of insertion. Contact lenses cover the cornea and thus are preferably transparent. Thus, Applicant notes that all the cited references (except Resnick) focus on ophthalmic drug delivery through ocular formulations that contain nanoparticles such as microemulsions or liposomes dispersed in aqueous solutions and make no mention or consideration as to implementing a delivery system using a contact lens as a vehicle.

This is not persuasive. Applicant is arguing the references individually when the rejection is based on the combination of all the reference, one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

6. Claims 6 and 17-19 **remain** rejected under 35 U.S.C. 103(a) as being unpatentable over Resnick (US 2002/0141760), Ding (PSTT, Vol. 1, No. 8, Nov 1998), Vandamme (Progress in Retinal and Eye Research 21 (2002)15-34), Nagarsenker et al (Int. Journal of Pharmaceutics 190 (1999) 63-71) and Paul et al (Current Science, Vol. 80, No. 8, 25 April 2001) as applied to claims 1, 4-5, 7-15 and 20 above, and further in view of Darouger et al (US 6,264,971).

Resnick/Vandamme/Nagarsenker teach the elements of claim 1, but are silent to the particular ophthalmic drugs recited in claims 6 and 17-19.

Darougar teaches an ocular insert that release an ophthalmic drug in a controlled, sustained fashion (abstract). Said ophthalmic drugs include antibiotics such as gentamycin, anti-microbial drugs, anti-inflammatories such as prednisolone acetate, non-steroidal agents such as diclofenac (i.e., Voltaren), pilocarpine and timolol (col. 5, line 41 – col. 6, line 16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include said particular ophthalmic drugs in nanoparticles in the contact of Resnick with a reasonable expectation of success because the prior art suggests that a) said drugs are well-known for the purpose of treating the eye an can be used in controlled release devices.

7. Claims 6 and 16 **remain** rejected under 35 U.S.C. 103(a) as being unpatentable over Resnick (US 2002/0141760), Ding (PSTT, Vol. 1, No. 8, Nov 1998), Vandamme (Progress in Retinal and Eye Research 21 (2002)15-34), Nagarsenker et al (Int. Journal of Pharmaceutics 190 (1999) 63-71) and Paul et al (Current Science, Vol. 80, No. 8, 25 April 2001) as applied to claims 1, 4-5, 7-15 and 20 above, and further in view of Raut (US 2003/0216431, filed: 8/1/2002).

Resnick/Vandamme/Nagarsenker teach the elements of claim 1, but are silent to the particular ophthalmic drugs recited in claims 6 and 16.

Raut teaches ophthalmic pharmaceutical compositions for topical administration to the eye (abstract). In a particular embodiment, Raut includes pyrimethamine (paragraph [0117]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include pyrimethamine in nanoparticles in the contact of Resnick with a reasonable expectation of success because the prior art suggests that pyrimethamine is well-known for the purpose of treating the eye and Resnick disclosed drug delivery for ocular use.

Response to Arguments

Applicant therefore submits that given Applicant's priority date (6/5/2002) prior to Rauts publication date (11/20/2003) - Resnick is not a proper prior art reference to the present. This is not persuasive. As mentioned above, it is noted that claim 16 does not find support in the US provisional application 60/385,571, as such the claim is given a

priority date of 6/5/2003. Therefore, the Raut reference is a proper reference under 102e.

New Rejections

8. Claims 2-3 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Resnick (US 2002/0141760), Ding (PSTT, Vol. 1, No. 8, Nov 1998), Vandamme (Progress in Retinal and Eye Research 21 (2002)15-34), Nagarsenker et al (Int. Journal of Pharmaceutics 190 (1999) 63-71) and Paul et al (Current Science, Vol. 80, No. 8, 25 April 2001) as applied to claims 1, 4-5, 7-15 and 20 above, and further in view of Ghosh (Indian Journal of Biochemistry & Biophysics, Vol. 37, October 2000, Pg 273-282).

As taught above Resnick/Ding/Vandamme/Nagarsenker and Paul teach all the limitations of claim 1.

Regarding claim 2: Resnick teaches microsphere with an approximate diameter of .25 micrometers (approx 250nm). It would have been obvious to one of skill in the art to optimize the size of the nanoparticles dependent on the desired purpose and desired results, as taught by Ding, absent any evidence of criticality. Furthermore it would have been obvious to one of skill in the art to distribute the nanoparticles in such as manner that optical transparency is maintained.

Regarding claims 3 and 21: Claims 3 and 21 claim that the amount of nanoparticles is from about 1-5% and from 5-20%. It would have been obvious to one of skill in the art through routine experimentation to determine the amount of

nanoparticles necessary to achieve desired results, while maintaining the optical transparency of the contact lens.

Resnick does not teach the nanoparticles to have a size of less than 200nm.

Ghosh teaches the use of polymeric nanoparticles as drug particles. Said nanoparticles have a size between 10 to 100nm. Water soluble as well as insoluble drugs can be entrapped into these polymers by adjusting the hydrophilicity/hydrophobicity of the core of the nanoparticles (Abs, Pg. 273, Col. 1). Delivering drugs through polymeric nanoparticles is considered to assist in reducing the adverse reactions and side effects (Pg 273, Col. 2). These polymeric nanoparticles hold great promise of maximizing drug effectiveness while minimizing drug toxicity.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Resnick and Ghosh. One of skill in the art would have been motivated to optimize the size of the particles taught by Resnick in order to obtain nanoparticles with a size ranging between 10 and 100nm, as Ghosh teaches these to be useful drug-carriers which can entrap water soluble and insoluble drugs and reduce the possibility of adverse reactions and side effects. One of skill in the art would expect reasonable success absent evidence to the contrary and furthermore Resnick/Ding/Vandamme/Nagarsenker and Paul teach the use of nanoparticles as drug carries which encapsulate hydrophilic and hydrophobic drugs

Conclusion

No claims are allowable.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Berríos whose telephone number is (571)270-7679. The examiner can normally be reached on Monday-Thursday: 7:00am-4:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 270-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A Berríos/
Examiner, Art Unit 1619

/Tracy Vivlemore/
Primary Examiner, Art Unit 1635